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I. Research Interests

- Physical sciences and modeling in hydrology
- Data sciences in Hydrology
- Assessment of climate change impacts on floods and water resources management
- Remote sensing in hydrology: weather radar and satellite
- Data assimilation and machine learning applications
- Model evaluation and forecast verification
- Interdisciplinary models integration
- Riverine and estuarine ecosystems

II. Employment History

2015 – Current	• Research Scientist • Hydrometeorology Modeling and Applications Team, Physical Sciences Division, National Oceanic & Atmospheric Administration, Boulder, Colorado, U.S.
2015 – Current	• Research Scientist • Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, Colorado, U.S.
2014 – 2015	• Postdoctoral Fellow • Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, Colorado, U.S.
2008 – 2014	• Teaching and Research Assistant • Department of Civil, Environmental and Architectural Engineering, College of

Engineering, Korea University, Seoul, South Korea

2007 – 2008
- Research Assistant
- Department of Civil Engineering, College of Engineering, Seokyeong University, Seoul, South Korea

III. Earned Degrees

Ph.D.
- 2010 – 2014, Water Resources Engineering, Korea University
- Topic of thesis: "Using a data assimilation technique and a concept of information transfer for quantitative radar rainfall estimation and mean field bias correction"
- Advisor: Prof. Chulsang Yoo

M.S.
- 2008 – 2010, Water Resources Engineering, Korea University
- Topic of thesis: "Effect of the uncertainty in the areal average rainfall and rainfall-runoff model parameters on the streamflow simulation"
- Advisor: Prof. Chulsang Yoo

B.S.
- 2004 – 2008, Civil Engineering, Seokyeong University

IV. Achievement: A. Peer-Reviewed Journal Papers

28 **Kim, J**., Han, H., Kim, B., Chen, H., Lee, J. (2020): A high-resolution-satellite-based rainfall erosivity map: a case study of the United States, Catena, 193, 104602.

27 **Kim, J**., Read, L., Johnson, L., Cifelli, R., Gochis, D. Han, H. (2020): An Experiment of Reservoir Representation Schemes to Improve Hydrologic Prediction: Based on Coupling the National Water Model with the HEC-ResSim. Hydrological Sciences Journal, 65 (10), 1652-1666.

26 **Kim, J**., Johnson, L., Cifelli, R., and Chandrasekar, V. (2019): Assessment of Antecedent Moisture Condition on Flood Frequency using a Distributed Hydrologic Model: A Case Study in Napa Basin, CA. Journal of Hydrology: Regional Studies, Vol. 26, 100629.

25 Han, H., **Kim, J. (corresponding author)**, Chandrasekar, V., Choi, J., Lim, S. (2019): Modeling Streamflow Enhanced by Precipitation from Atmospheric Rivers using the NOAA National Water Model: A Case Study of Russian River Basin on February 2004, Atmosphere, Vol. 10, No. 8.

24 **Kim, J**., Han, H., Johnson, L. E., Lim, S., Cifelli, R. (2019): Hybrid Machine Learning Framework for Hydrological Assessment, Journal of Hydrology, Vol. 577.

23 **Kim, J**., Kim, T. (2019): An Optimization of Distributed Hydrologic Model using Multi-Objective Optimization Method. Journal of Wetlands Research, Vol. 21, No. 1, pp. 1-8.

22 **Kim, J**., Johnson, L., Cifelli, R., Choi, J., and Chandrasekar, V. (2018): Derivation of Soil Moisture Recovery Relation Using SCS Curve Number Method. Water, Vol. 10, No. 7, pp. 1-21.

21 **Kim, J.**, Lee, J., Song, Y., Han, H., and Joo, J. (2018): Modeling the Runoff Reduction Effect of

Low Impact Development Installations in an Industrial Area, South Korea. Water, Vol. 10, No. 8, pp. 1-15.

20 **Kim, J**. and Joo, J. (2017): Evaluation of the Effect of Low Impact Development on the Subbain-based Stormwater Reduction. Journal of Korean Society of Hazard Mitigation, Vol. 17, No. 6, pp. 523-532.

19 **Kim, J**. and Joo, J. (2017): A Study on the Performance Comparison of the Low Impact Development Facilities for Long-term Stormwater Reduction. Journal of Korean Society of Hazard Mitigation, Vol. 17, No. 5, pp. 337-344.

18 **Kim, J**., Choi, S., and Joo, J. (2017): EPA SWMM-LID Modeling for Low Impact Development. Journal of Korean Society of Hazard Mitigation, Vol. 17, No. 2, pp. 415-424.

17 Yoo. C., Ku, J., Yoon, J., **Kim, J**. (2016): Evaluation of Error Indices of Radar Rain Rate Targeting Rainfall-Runoff Analysis. ASCE Journal of Hydrologic Engineering, Vol. 21, No. 9.

16 Yoo. C., Yoon, J., **Kim, J**. Ro, Y. (2016): Evaluation of the Gap Filler Radar as an Implementation of the 1.5 km CAPPI Data in Korea. Meteorological Applications, Vol. 23, No. 1, pp. 76-88.

15 **Kim, J**., Lee, J., Park, M., and Joo, J. (2016): Effect of Climate Change Scenarios and Regional Climate Models on the Drought Severity-Duration-Frequency Analysis. Journal of Korean Society of Hazard Mitigation, Vol. 16, No. 2, pp. 351-361.

14 **Kim, J**., Kim, S., Park, M., and Joo, J. (2016): A Comparison of Drought Prospection by Future Climate Models. Journal of Korean Society of Hazard Mitigation, Vol. 16, No. 2, pp. 463-472.

13 **Kim, J**., Kim, S., and Joo, J. (2016): Analysis of Drought Characteristics Depending on RCP Scenarios at Korea. Journal of Korea Water Resources Association, Vol. 49, No.4, pp. 293-303.

12 **Kim, J.**, Yoo, C., Lim, S., Choi, J., 2015: Usefulness of Relay-Information-Transfer for Radar QPE. Journal of Hydrology, Vol. 531, pp. 308-319.

11 Joo, J., Kim, S., Park, M., **Kim, J. (corresponding author)**, 2015: Evaluation and Calibration Method Proposal of RCP Daily Precipitation Data. Journal of Korean Society of Hazard Mitigation, Vol. 15, No. 2, pp. 79-91.

10 **Kim, J**., Park, M., and Joo, J. (2015): Comparison of Characteristics and Spatial Distribution Tendency of Daily Precipitation Based on the Regional Climate Models for the Korean Peninsula. Journal of Korean Society of Hazard Mitigation, Vol. 15, No. 4, pp. 59-70.

9 **Kim, J**. and Joo, J. (2015): Characteristics of Daily Precipitation Data Based on the Detailed Climate Change Ensemble Scenario Depending on the Regional Climate Models and the Calibration. Journal of Korean Society of Hazard Mitigation, Vol. 15, No. 4, pp. 261-272.

8 **Kim, J.**, Yoo, C., 2014: Use of a Dual Kalman Filter for Real-Time Correction of Mean Field Bias of Radar Rain Rate. Journal of Hydrology, Vol. 519, Part D, pp. 2785-2796.

7 **Kim, J.**, Yoo, C., Park, M., Joo, J., 2014: Effect of Changes in Soil Maps on the Effective Rainfall

based on SCS CN Method. Journal of Korean Society of Hazard Mitigation, Vol. 14, No. 5, pp. 283-291.

6 **Kim, J.**, Yoo, C., Park, M., Joo, J., 2014: Evaluation of Problems to Apply Runoff Curve Number to Mountain Area in Korea. Journal of Korean Society of Hazard Mitigation, Vol. 14, No. 5, pp. 293-298.

5 **Kim, J.**, Yoo. C., 2014: Use to Extended Kalman Filter for Real-Time Decision of Parameters of Z-R Relationship. Journal of Korea Water Resources Association, Vol. 47, No. 2, pp. 119-133.

4 Yoo, C., Park, C., Yoon, J., **Kim, J.**, 2014: Interpretation of Mean-Field Bias Correction of Radar Rain Rate using the Concept of Linear Regression, Hydrological Processes, Vol. 28, No. 19, pp. 5081-5092.

3 Yoo, C., **Kim, J. (corresponding author)**, Yoon, J., 2012: Uncertainty of Areal Average Rainfall and its Effect on Runoff Simulation: A Case Study for the Chungju Dam Basin, Korea, KSCE Journal of Civil Engineering, Vol. 16, No. 6, pp. 1085-1092.

2 Yoo, C., Hwang, J., **Kim, J. (corresponding author)**, 2012: Use of the Extended Kalman Filter for the Real-Time Quality Improvement of Runoff Data: 1. Algorithm Construction and Application to One Station, Journal of Korea Water Resources Association, Vol. 45, No.7, pp. 697-711.

1 Yoo, C., **Kim, J. (corresponding author)**, Chung, J. H., Yang, D. M., 2011. Mean Field Bias Correction of the Very-Short-Range-Forecast Rainfall using the Kalman Filter. Journal of Korean Society of Hazard Mitigation, Vol. 11, pp. 17-28.

IV. Achievement: B. Journal Papers under Review, in Revision or Preparation

4 **Kim, J**., Johnson, L., Wood, A., Cifelli, R. (2020): A Preliminary Assessment of the NOAA National Water Model Operational Short-Range Streamflow Forecast in the San Francisco Bay Area, Journal of Hydrology, March 2020, **under internal review through the NOAA system**.

3 **Kim, J**. (2020): Verification of the operational streamflow forecasts of the NOAA national water model for flood control and water resources management in the Western United States, Journal of Hydrology: Regional Studies, February 2020, **under internal review through the NOAA system**.

2 **Kim, J**. (2020): Reliability of the operational streamflow forecasts of the NOAA National Water Model: A Case Study of the Hurricane Florence, Water Resources Research, February 2020, **under internal review through the NOAA system**.

1 **Kim, J**., Han, H., Chen, H. (2020): CMORPH Evaluation in South Korea, Journal of Hydrology: Regional Studies, January 2020, **under internal review through the NOAA system**.

IV. Achievement: C. Conference Proceedings

42 **Kim, J**, Cifelli, R., Johnson, L., Hughes, M., Viterbo, F., Nowak, K. 2020: Performance and

Reliability of the NOAA National Water Mode Operational Forecast for Water Resources Management. 2020 AMS annual meeting. January 2020, Boston, MA, U.S.

41 **Kim, J**, Johnson, L., Cifelli, R. 2019: Assessment of NOAA National Water Model Operational Short-Range Streamflow Forecasts: A February 2019 Case Study in San Francisco Bay Area. 2019 AGU annual meeting. December 2019, San Francisco, CA, U.S.

40 Johnson, L., Pratt, G., **Kim, J**, Cifelli, R. 2019: AQPI: System Requirements for Hydrological Functions. 2019 AGU annual meeting. December 2019, San Francisco, CA, U.S.

39 Johnson, L., Cifelli, R., **Kim, J**, Pratt, G. 2019: Distributed Hydrologic Modeling for Flood Mitigation: San Francisco Bay Area Advanced Quantitative Precipitation Information System. 2019 AMS annual meeting. January 2019, Phoenix, AZ, U.S.

38 Johnson, L., Boucher, M., Leventhal, R., **Kim, J**. 2018: AQPI: Distributed Hydrologic Modeling for Flood Mitigation. 2018 AGU conference. December 2018, Washington D.C., U.S.

37 **Kim, J**., Johnson, L., Cifelli, R., Gochis, D., Read, L., Chandrasekar, V. 2018: Development of Hydrological Assessment Tool (HAT) based on a hybrid machine learning approach. 2018 AGU conference. December 2018, Washington D.C., U.S.

36 Han, H., Ramirez, J. A., **Kim, J**., Cifelli, R., 2018: Development of Hydrological Assessment Tool (HAT) based on a hybrid machine learning approach. 2017 AGU conference. December 2018, Washington D.C., U.S.

35 **Kim, J**., Xu, J., Delaney, C., Johnson, L., Lee, N., Chen, H., Xu, L., Cifelli, R., Chandrasekar, V. 2018: AQPI Integrated Water Management Modeling: Case Studies using Local Models in San Francisco Bay Area. 10th Biennial Bay-Delta Science Conference. September 2018, Sacramento, CA, U.S.

34 Cifelli, R., Johnson, L., **Kim, J**., Co-authors. 2018: An Advanced Quantitative Precipitation Information System from the San Francisco Bay Area. 10th Biennial Bay-Delta Science Conference. September 2018, Sacramento, CA, U.S.

33 Johnson, L., **Kim, J**., Cifelli, R., Pratt, G., Boucher, M., Leventhal, R. 2018: AQPI: Distributed Hydrologic Modeling for Flood Mitigation. 10th Biennial Bay-Delta Science Conference. September 2018, Sacramento, CA, U.S.

32 Chen, H., Cifelli, R., Chandrasekar, V., Jasperse, J., Xu, L., Zedler, E., Spaulding, J., **Kim, J**. 2018: AQPI: Radar-Derived Quantitative Precipitation Estimation in Complex Terrain over the San Francisco Bay Area. 10th Biennial Bay-Delta Science Conference. September 2018, Sacramento, CA, U.S.

31 **Kim, J**. Johnson, L., Cifelli, R., Gochis, D., Read, L. 2018: Coupling the National Water Model with a Reservoir Operation Simulation Model: Russian River Basin Case Study. 2018 Forecast Informed Reservoir Operations (FIRO) workshop. July 2018, San Diego, CA, U.S.

30 **Kim, J**. Johnson, L., Cifelli, R. 2018: Hydrological Assessment of the National Water Model in San Francisco Bay Area: Development of Multifactor Classification Approach Based on Machine Learning. 2018 Forecast Informed Reservoir Operations (FIRO) workshop. July 2018, San Diego, CA, U.S.

29 **Kim, J**. and Joo, J. 2018: Evaluation of Low Impact Development using EPA SWMM-LID Modeling, 13th International Conference on Hydroinformatics. July 2018, Palermo, Italy.

28 Martyr-Koller, R., Herdman, L., **Kim, J.,** Erikson, L., Johnson, L., Stacey, M., Barnard, P. 2018: How Does Sea-Level-Rise Influence tides, Coastal Storms, and River Flow Interactions? Insights from an Urbanized Estuary. EGU General Assembly 2018, Vienna, Austria.

27 **Kim, J**., Herdmanm L., Johnson, L., Martyr-Koller, R., Cifelli, R., Barnard, P., Erikson, L., Hart, J., Chandrasekar, V. 2018: Integrated Flood Forecast Model (Hydro-CoSMoS) for San Francisco Bay. 2018 American Meteorological Society 98th Annual Meeting, 32nd Conference on Hydrology. January 2018, Austin, Texas, U.S.

26 Hart, J., Johnson, L., Herdmanm L., **Kim, J**., Martyr-Koller, R., Cifelli, R., Barnard, P., Erikson, L., Chandrasekar, V. 2018: Assessment of Information Products for a Coupled Watershed-Coastal Flood Forecast Modeling System. 2018 American Meteorological Society 98th Annual Meeting, 32nd Conference on Hydrology. January 2018, Austin, Texas, U.S.

25 **Kim, J**. Johnson, L., Cifelli, R., Chandrasekar, V., Gochis, D., McCreight, J., Yates, D., Read, L., Flowers, T., and Cosgrove, B. 2017: Experiments with Interaction between the National Water Model and the Reservoir System Simulation Model: A Case Study of Russian River Basin. 2017 AGU conference. December 2017, New Orleans, LA, U.S.

24 **Kim, J**. Chandrasekar, V., Cifelli, R., Johnson, L 2017: Coupling Fluvial and Oceanic Drivers in Flooding Forecasts for San Francisco Bay. 2017 UCOWR/NIWR Annual Conference "Water in a Changing Environment". June 2017, Fort Collins, CO, U.S.

23 **Kim, J**., Herdman, L., Cifelli, R., Barnard, P., Erikson, L., Johnson, L., Chandrasekar, V. 2017: Coupling Fluvial and Oceanic Drivers in Flooding Forecasts using Multi/Radar Multi/Sensor Data for San Francisco Bay. 2017 Weather Radar and Hydrology: Weather Radar for Hydrologic Prediction and Water Management: 25 years of Progress and Emerging Challenges. April 2017, Seoul, South Korea.

22 Johnson, L., **Kim, J**., Cifelli, R., Chandrasekar, V. 2016: Soil Water Retention Curve. 2016 AGU conference. December 2016, San Francisco, CA, U.S.

21 Herdman L., **Kim, J**., Cifelli, R., Barnard, P., Erikson, L., Johnson, L., Chandrasekar, V. 2016: Coupling Fluvial and Oceanic Drivers in Flooding Forecasts for San Francisco Bay. 2016 AGU conference. December 2016, San Francisco, CA, U.S.

20 Herdman, L., Erikson, L., Barnard, P., **Kim, J.**, Cifelli, R., Johnson, L. 2016: Integrating Fluvial

and Oceanic Drivers in Operational Flooding Forecasts for San Francisco Bay, Geophysical Research Abstracts Vol. 18, EGU2016-18125, April 17-22, 2016, Vienna, Austria.

19 **Kim, J**., Herdmanm L., Johnson, L., Martyr-Koller, R., Cifelli, R., Barnard, P., Erikson, L., Hart, J., Chandrasekar, V. 2016: Comparison of Semi-Distributed and Fully Distributed Hydrological Models in Complex Terrain. 2016 American Meteorological Society 96th Annual Meeting, 30nd Conference on Hydrology. January 2016, New Orleans, LA, U.S.

18 **Kim, J**., Cifelli, R., Johnson, L., Livneh, B., Chandrasekar, V. 2015: Effect of Rainfall Spatial Distribution on Flood Forecasting in Complex Terrain. 2015 AGU conference. December 2015, San Francisco, CA, U.S.

17 **Kim, J.,** Cifelli, R., Johnson, E. L., Livneh, B., Chandrasekar, V., 2015: Comparison of Distributed Rainfall-Runoff Models – A Case Study for the Storm Event on December 10, 2014, 2015 AWRA Annual Water Resources Conference, November 16-19, 2015, Denver, CO, U.S.

16 **Kim, J.**, Chandrasekar, V., Chen, H., Lim, S., 2015: Interaction of Spatio-Temporal Resolution of Rainfall Observations and a Semi-Distributed Runoff Model for Flood Forecasting: A Case Study from Dallas Fort Worth Region, 37th Conference on Radar Meteorology, September 14-18, 2015, Norman, OK, U.S.

15 Choi, J., Yoo, C., **Kim, J.**, Han, M., 2015: A Method of Relay-Information-Transfer for Radar QPE: A Case Study for the Coastal Area in the Korean Peninsula, 4th Asian Conference on Civil, Material and Environmental Sciences, August 27-27, 2015, Osaka, Japan.

14 **Kim, J.,** Chandrasekar, V., Yoo, C., Lim, S., Choi, J., 2014: Quantitative Precipitation Estimation Algorithm using an Overlapped Observation Area between Radars, 8th European Conference on Radar in Meteorology and Hydrology, September 1-5, 2014, Garmisch-Partenkirchen, Germany.

13 Choi, J., **Kim, J.,** Chandrasekar, V., Lim, S., 2014: Use of a Micro Rain Radar (MRR) for Measurements of Rain Drop Sizes and Quantitative Estimation Precipitation in Mountain Area, 8th European Conference on Radar in Meteorology and Hydrology, September 1-5, 2014, Garmisch-Partenkirchen, Germany.

12 **Kim, J.**, and Yoo, C., 2013: The Relay Transfer of Information for Quantitative Precipitation Estimation. 1th International Workshop on Rain Radar and its Hydrological Application, 2013, South Korea.

11 **Kim, J.**, Yoon, J., and Yoo, C., 2012: Decision of Real-Time Z-R Relation using the Kalman Filter. IAHR-APD 2012, South Korea.

10 Yoon, J., **Kim, J.**, and Yoo, C., 2012: Identify the Range Dependent Error of the Radar Rainfall Data. IAHR-APD 2012, South Korea.

9 Yoo, C., **Kim, J.**, and Yoon, J., 2012: Use of the Dual Kalman Filter for Real-Time Decision of G/R Ratio. 7th European Conference on Radar in Meteorology and Hydrology, France.

8 Yoon, J., **Kim, J.**, Jun,C., and Yoo, C., 2012: The Error Structure of the Radar Reflectivity and the Correction of the Range Dependent Error. 7th European Conference on Radar in Meteorology and Hydrology, France.

7 **Kim, J.**, Yoo, C., and Ku, J., 2012: Problems of 1.5 km CAPPI in Korea, Asia Oceania Geosciences Society 2012, Singapore.

6 Yoo, C., **Kim, J**., Suk, M., Park, H., and Cha, J., 2012: Decision of Real-Time Z-R Relation for the Hydrology Application of CAPPI Reflectivity. Korea Society of Civil Engineers Conference 2012, South Korea.

5 Yoo, C., Yoon, J., **Kim, J.**, Park, C., and Jun, C., 2011: A Quality Evaluation Criterion for Radar-Rate Data. Weather Radar and Hydrology 2011, United Kingdom.

4 Yoo, C., **Kim, J.**, Yoon, J., Park, C., Park, C., and Jun, C., 2011: Use of the Kalman Filter for the Correction of Mean-Field Bias of Radar Rainfall. Fifth Korea-Japan-China Joint Conference on Meteorology 2011, South Korea.

3 **Kim, J.**, Yoo, C., 2010: Effects of the Uncertainty in the Estimated Catchment Average Rainfall and Rainfall-Runoff Model Parameters on the Stream Flow Simulation, Korean Society of Hazard Mitigation Conference 2010, South Korea.

2 Yoo, C., **Kim, J.**, and Hwang, J., 2010: Quality Improvement of Observed Runoff Data using Extended Kalman Filter, Korea Society of Civil Engineers Conference 2010, South Korea.

1 Yoo, C., **Kim, J.**, 2009: Evaluation of July 15, 2006 Strom Event using the ModClark Model. Korean Society of Hazard Mitigation Conference 2009, South Korea.

IV. Achievement: D. Research Reports

- L.E. Johnson, **Kim, J**., Cifelli, R. (2018). Assimilation of Lake and Reservoir Levels into the WRF-Hydro National Water Model to Improve Operational Hydrologic Predictions, FY2016 Joint Technology Transfer Initiative, NOAA-OAR-OWAQ-2016-20048242015, NOAA Office of Oceanic and Atmospheric Research Office of Weather Air Quality (OWAQ).
- **Kim, J**., Herdman, L., L.E. Johnson, T. Coleman, R. Cifelli, R. Martyr-Koller, J. Finzi-Hart, L. Erikson and P. Barnard. (2018). San Francisco Bay Integrated Flood Forecasting Project - Summary Report. NOAA Technical Memorandum PSD-317, NOAA Printing Office, Silver Spring, MD, 37 pp. https://doi.org/10.7289/V5/TM-OAR-PSD-317.

V. Education Experiences

- Teaching Assistant (Mar. 2008 – Dec. 2013)
- Courses able to lecture
    - Deterministic Hydrology

- Rainfall-Runoff Modeling
- Fluid Mechanics Experiment
- Understanding of Natural Disaster
- Remote Sensing in Hydrology
- Machine Learning and Applications in Hydrology

VI. Service: Journal Review

- List of professional journals as follows:
  - Journal of Hydrology
  - Journal of Hydrology: Regional Studies
  - Journal of Hydrometeorology
  - Journal of Atmospheric and Oceanic Technology
  - Sustainable Cities and Society
  - Atmosphere
  - Geosciences (Reviewer Board)
  - Water

VI. Service: Conference Session Convener

- American Geophysical Union (AGU) 2019 annual meeting: GC11E: Advances in Reservoir Representation in Hydrological and Earth System Model
- American Geophysical Union (AGU) 2018 annual meeting: NH33B: Integrated Flood Modeling

VI. Service: Professional Activities and Memberships

- Member of the American Geophysical Union (AGU)
- Member of the American Meteorological Society (AMS)
- Member of the European Geosciences Union (EGU)
- Member of the Korean Society of Civil Engineers (KSCE)
- Member of the Korean Society of Hazard Mitigation (KSHM)
- Member of the Korean Water Resources Association (KWRA)
- Member of the Korean Wetlands Society (KWS)